



**Building Resilient Learning Communities:  
Using Evidence to Support Student Success**

#ETConf20



## **Title: Linking dialogue to data and data to dialogue: from analytics to understanding student engagement**

Conference Topic: Empowering staff and students to use evidence

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### **Abstract**

The focus of this short paper is on the development and future operationalisation of learning analytics practices, aligned to a set of holistic student engagement indicators, that have been co-created through student and staff consultation and collaboration within the context of a geographically and digitally distributed university.

### **Introduction**

The University of the Highlands and Islands (UHI) is a geographically and digitally distributed university that is tertiary in focus, providing access to further and higher education opportunities across and beyond a geographic area approximately the size of Belgium. The university is comprised of thirteen Academic Partners that include colleges and specialist research institutes, and offers programmes of study through a range of modes that includes site specific delivery (e.g. marine science in Oban, archaeology in Orkney), online delivery (which is increasing at postgraduate level), and networked delivery. The latter is particularly important in the context of UHI, and allows our higher education students to undertake their studies from home, their nearest campus, or one of the university's seventy plus regional study centres, regardless of where within the UHI network their programme is being delivered from and regardless of where within the highlands and islands they reside.

Perhaps unsurprisingly then, blended learning and teaching approaches are central to educational practice at the university and are supported through a combination of synchronous online learning and teaching (through videoconference and virtual classroom technologies), face-to-face and 'in the field' activities, and asynchronous and synchronous engagement through the university's Virtual Learning Environment (VLE) Brightspace. The university moved to Brightspace in the academic year 2019/20, having chosen the VLE primarily on the extent to which it aligned with and would enable the further implementation of the university's Learning and Teaching Enhancement Strategy. The strategy was designed through collaboration and consultation as a 'common language' strategy based on values that include, for example, 'providing a connected learning experience', 'active and

creative use of technology', 'supporting the learner as an individual', 'evidence-based educational practice' and 'reflective practice and continuous improvement'.

Brightspace was also partially selected as the new VLE based on the range of learning analytics functionality it provides, including flexibility in how learning analytics functionality and reporting could be configured within and across units, modules and programmes, and the potential to integrate with other sources of data relating to learning and teaching, curriculum design and delivery, and student engagement and progression.

In the above respect, Brightspace is an important enabling platform for the further development and implementation of learning analytics policy and practice at UHI, and for advancing this in the wider context of our initial work to date in identifying and scoping a set of student engagement indicators linked to student support provision. Our initial progress, which was reported on at the Enhancement Conference in 2018 (Smyth, 2018), was framed by concerns related to "*how the university can more effectively harness the student engagement and experience data it generates [including]: developing staff and student capabilities in interpreting and acting upon data; linking our interpretation of data to timely interventions and enhancements in learning and teaching, or in meeting wider student support needs; and tracking and evaluating the effectiveness of those interventions*".

As previously reported (ibid), our initial work established an initial agreement on how and where we would seek to link the kinds of engagement indicators we had begun to identify to a range of interventions to support our students to engage in their learning and related activities. The priorities identified, which remain to the fore, include:

- Early identification of students who may be at risk with respect to their initial engagement with the university and their studies, and who may be experiencing challenges around social inclusion and integration or experiencing academic challenges relating to their chosen programme of studies
- Developing more effective means of gauging and understanding module and programme cohort patterns of engagement in order to: improve student support; identify points of 'disconnect' that reflect issues of curriculum or learning and teaching activity design rather than students being unprepared or unwilling to engage; and inform the future design of learning activities
- Supporting Personal Academic Tutors, and equivalent student support roles within the university, in working with individual learners, and potentially also class groups, through clearer and more timely provision of student engagement data

The social engagement dimension to the first point above, and focus on the potential for 'disconnect' in the second, reflect a concern with developing a 'holistic' approach to the implementation of analytics and engagement indicators (and corresponding interventions) which recognises that 'being', wellbeing and 'being successful' at university are multifaceted dimensions that extend beyond student interaction with learning activities and resources.

### **Critical considerations**

Within the context of the observations offered above, there are a number of critical considerations that are framing our thinking about data, learning analytics and engagement indicators. These are informed by pedagogical and ethical concerns and questions addressed in the wider literature concerning learning analytics practice (e.g. Drachsler and Greller, 2016; McPherson and Heggie, 2016; Sclater and Bailey, 2018), and include:

- The limitations and limited scope for understanding and supporting student engagement, learning and progression when learning analytics are either defined as, or effectively limited to being, digital proxy measures of student engagement (predicated on frequency of access to and use of the VLE and resources therein)
- The narrow scope of learning analytics for better understanding and enhancing the wider student experience when application is limited solely or predominantly to learning and teaching activities, rather than other forms of engagement with the university, services, and the groups within the university that students are part of
- Challenging the predication that what is offered to students by way of learning, teaching and assessment activities, the design and delivery of the curricula, and the design and content of the VLE is already 'fit for purpose', and that engagement (or lack thereof) is either a learner-based issue or limitation. For example, in any university there will be instances, such as in the close grouping of assignment deadlines across modules, where potential 'crunch points' in learning and teaching activities have inadvertently been designed into programmes of study and which may lessen or negate the potential for students to engage as they would normally hope to
- Seeking to avoid learning analytics practices that 'gamify' and/or are likely to increase apprehension or anxiety by communicating to individual students where they are 'placed', or how they compare in relation to the engagement, time on tasks, or assessed performance of their peers within their modules or programme

Collectively, our recognition of and concern with the above is centred on the belief that learning analytics and related practices should not just inform educators and the university as to how their students are engaging, but should guide educators, the university and the staff and student communities therein to co-develop better educational practices and provision, and new or improved student support provision and opportunities.

### **A dialogic approach**

In moving towards an informed position on learning analytics and engagement indicators, to the current position described further below, there have been a number of consultation, research and benchmarking activities undertaken to ground our developments and to establish a collectively agreed way forward. The focus of these activities has been on further understanding the potential applications of learning analytics in the university, understanding and positioning our own developing practices against those in the sector, and on investigating best practice within universities that are at a more advanced stage in using learning analytics and engagement indicators in the way we are aspiring to. This includes:

- The external benchmarking and internal UHI stakeholder perspectives investigation on learning analytics undertaken by Marie-Lise Schlappy (2016), as part of a jointly sponsored internal scholarship project supported by the UHI's Learning and Teaching Academy and Learning and Information Services department. This explored existing, early-stage analytics related practices across the university partnership, views on challenges and potential benefits held by key personnel, and our institutional readiness and potential future use for learning analytics
- Work initiated by our Quality Assurance and Enhancement Committee on exploring attendance monitoring and extending this to the development of a student engagement indicators approach, including initial scoping activities (Smyth, 2018)
- The Erasmus+ exchange to the University of Vienna to explore Learning Analytics practices with renowned expert Professor Wolfgang Greller, undertaken by John

Smith (Learning and Information Services) and Professor Frank Rennie (Lews Castle College UHI) in 2018 (as captured in Smith and Rennie, 2018)

- Consultation work undertaken with class representatives at the joint Highlands and Islands Students Association (HISA)/Learning and Teaching Academy Class Rep Summit in 2019. Attended by all class reps, and a range of staff from across the university, a key aspect of this event was a 'World Café' session exploring the student perspective on engagement indicators and learning analytics. This involved students and staff working together to identify and prioritise the student perspective on the most valuable and important uses of analytics and engagement indicators. The overall event itself was part of the university's work for the recently concluded QAA Scotland Enhancement Theme on 'Evidence for Enhancement' (and for which one of our three internal strands of prioritised project activity was focused on initiatives around 'Linking Student Representation to Enhancement')
- Further benchmarking work and research undertaken to produce an institutional position paper on Learning Analytics (Connor et al, 2020) as described further on.



**Student and staff learning analytics and engagement indicators World Café session**

Our activities as described above have occurred in tandem with, and in cognisance of, a number of existing and emerging analytics related developments within the university. This includes the BRAG (Blue, Red, Amber, Green) tracking and action planning tools to support student retention and attainment which are in place within several of the university's Academic Partners, and the current Dashboard Reporting project which is developing analytics and reporting functionality related to the delivery of and student engagement with programmes at Subject Network, Faculty, Academic Partner and university-wide levels.

In addition to the above, at the time of writing the university has recently concluded an MSc student placement for 2020, managed by Dr Heather Fotheringham within the Learning and Teaching Academy. The 12-week summer placement was a result of a partnership between The Data Lab, MBN Solutions, Robert Gordon University (RGU) and the UHI, and was focused on making data and insights from the university's various student surveys (including the National Student Survey, Student Satisfaction and Engagement Survey, Early Student Experience Survey) more accessible to various stakeholders including Quality Managers, Subject Network Leaders and Programme Leaders. It has had three key objectives: to automate data preparation; develop new analyses and visualisations; and to explore insights from applying advanced data science techniques, such as natural language processing.

Whilst there are occasions when data from a single system or process can be used in isolation to provide insights into activity, progress and engagement, within the sector there is an increasing move towards cross-functional integration and analysis of datasets to provide a more holistic view of the student journey and experience, providing early indication and proactive intervention at an individual and also cohort level. As we develop our learning analytics related practices at UHI this is the direction we are ultimately seeking to move in,

although recognising the significant challenges this entails in terms of: integrating data from various platforms (something Brightspace should at least partly enable); developing staff and student capability in interpreting and acting upon the data; linking our interpretation to timely interventions and enhancements in learning and teaching; meeting wider student support needs; and tracking and evaluating the effectiveness of those various interventions.

### **Our evolving set of engagement indicators**

We are currently defining the type and categories of learning analytics we intend to operationalise going forward, with the implementation of the more sophisticated learning analytics functions in Brightspace only recently becoming available (this occurs after one year of the VLE being in use, so that there is an established body of data upon which to base, in particular, predictive learning analytics). Within the broader set of holistic learning analytics and engagement indicators we intend to progress, and which would draw upon data from across the VLE and other platforms, our work thus far (including our student staff World Café consultation as previously described) has identified the following engagement indicators for which there is a strong student and staff consensus on value or usefulness:

- Attendance at and completion of induction events and activities
- Attendance within class including videoconference classes
- Having logged on to the VLE by an established point early in the semester
- Engagement with a range of online resources and spaces over time
- Having engaged with and made use of the library including online services
- Submission of formal coursework on time
- Submitted for formative feedback opportunities
- Occurrence and clustering of assignment deadlines
- Online engagement with peers
- Engagement with Personal Academic Tutor or equivalent
- Engagement with wider student support provision
- Completion of student feedback surveys
- Number of HISA clubs and societies formed
- Club involvement (memberships, participation in events)
- Recruitment for students into non-club extracurricular activities offered through HISA
- Numbers of formal complaints per unit/module/programme
- Student satisfaction means for units/modules/programmes
- Attendance and grades (including downward trends) for cohorts

Many of these are broad categories as stated above, with further granularity currently being defined to differentiate between specific indicators within each of the broader categories.

### **Defining our institutional position**

To consolidate our work to date, and provide the means for establishing a shared institutional understanding of and direction for learning analytics practices at UHI, we have recently produced and had approved a detailed institutional position paper and associated development plan (Connor et al, 2020). This provides a means for: defining what we mean by learning analytics; summarising progress to date including independent projects and initiatives that require alignment or integration; establishing the ethical dimensions to be

considered; and outlining our future development plan now that the analytics functionality within Brightspace is becoming active. In terms of the four main categories of analytics identified in the plan, as below, our immediate focus within the context of Brightspace will be on exploring how we can harness predictive analytics in a meaningful and ethical way.

- Descriptive analytics – looking to the past and asking, what happened?
- Diagnostic analytics – looking to the past and understanding why something happened based on an analysis of descriptive analytic data
- Predictive analytics – looking forward and trying to understand what will likely happen, based on historical data and past performance
- Prescriptive analytics – looking forward and recommending a course of action based on an analysis of predictive analytics

However, moving forward our intention is that our initial work within Brightspace (in combination with parallel activities in other areas of analytics practice at the university) will provide the knowledge and experience to establish an integrated analytics solution, in which learning analytics and student engagement data drive collaborative enhancement activities. This will include further work focused on defining analytics related to the design and implementation of the curriculum including the range and spread of formal assignments, the scheduling and concurrence of formal learning activities, and other potential pressure points for students in their engagement (and ability to engage effectively) in their learning.

### **Challenges to date**

In our developments to date, there have been a number of challenges to overcome. In addition to developing our position, and a shared understanding of our ethos and direction in relation to learning analytics and engagement indicators (which we have now ratified through our work as described above) there have been other significant factors.

Logistically, COVID-19 has held up progress. Not only because it has disrupted the timeframe within which to take the work forward, but due to also disrupting our datasets. As indicated previously, predictive analytics requires baseline data based on a comparable cohort and pedagogy. With so many courses having to pivot to fully online, even just a partial disruption in comparison to last year's model challenges the basis of this form of analytics.

Data privacy and the new GDPR regulations have also been a challenge, and we are coming to more fully understand and negotiate the complexity that is necessarily required in establishing the required data privacy provisions and related ethical clearance. We are also, following the alternative examination arrangements introduced across the UK during COVID-19, carefully negotiating the negative connotations now associated with the concept and use of algorithms in relation to learning and teaching, assessment and student support.

We have alluded already to skills development, which we see as an often-overlooked aspect of learning analytics implementation. A key challenge here will be in ensuring consistency of use, so that data relating to student engagement at individual and cohort levels results in the same or equitable support interventions in the same time frame. This challenge has an additional dimension in a university such as UHI, comprised of multiple academic partners.

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